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स्टाइरीन-ब्यूटाडाइन रबड़ लैटेक्स  
— विशिष्टि  
भाग 2 कार्बोक्सिलेटेड  
( दूसरा पुनरीक्षण )

Styrene-Butadiene Rubber Latex  
— Specification  
Part 2 Carboxylated  
( Second Revision )

ICS 83.040.10

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## FOREWORD

This Indian Standard (Part 2) (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Rubber and Rubber Products Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was published in 1985 and subsequently revised in 2020 to update mainly cross referred standards. The type of latex, which was covered was commercially known S-2000 latex; this number was allotted by the International Institute of Synthetic Rubber Producers Inc., USA.

Styrene-butadiene latex is used for variety of purposes like tyre cord dipping, construction, textiles, compounding, adhesives for footwear and paper industry, carpet backings, upholstery and linings for proofed goods like firefighting hoses, etc.

Second revision is carried out to upgrade the standard with current trade practices and quality requirements. Based on the availability of carboxylated and non-carboxylated styrene-butadiene rubber latex, the Committee decided to bifurcate the standards, as given below:

Part 1: Non-Carboxylated

Part 2: Carboxylated

This Part 2 includes requirements of carboxylated styrene-butadiene type rubber latex. Requirement of brookfield viscosity has been included and Mooney viscosity, bound styrene and mechanical stability have been deleted. Scale of sampling and criteria of conformity has been modified. Amendment No. 1 has also been considered during the revision.

This revision also includes flexi container for the packaging, for which the method of drawing representative samples of the material and criteria for conformity has also been incorporated. Flexi Container is a hermetic sealed, collapsible and flexible bag/bladder being used for the transportation and storage of non-hazardous liquid chemicals such as liquid detergents, lubricants, fertilizers, liquid latex, food items, paints etc. Flexi packaging is more beneficial to manufacturers for reducing transportation cost, packing cost, and reducing energy during packing or filling; to customers by offering convenient features that were not available in rigid packaging, thus enhancing sustainability.

The composition of the committee responsible for formulation of this standard is listed in Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 (*second revision*). The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard***STYRENE-BUTADIENE RUBBER LATEX SPECIFICATION****PART 2 CARBOXYLATED****1 SCOPE**

This standard prescribes the requirements and methods of sampling and test for hot carboxylated styrene-butadiene rubber latex, emulsified with synthetic emulsifiers.

**2 REFERENCES**

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

**3 REQUIREMENTS**

**3.1** The material shall comply with the requirements given in Table 1, when tested as prescribed in col (5) of Table 1.

**4 PACKING AND MARKING**

**4.1 Packing** — The latex shall be packed as agreed to between the purchaser and the supplier.

**4.2 Marking** — The containers shall be marked with the following:

- a) Name of the material;
- b) Name of the manufacturer or trade-mark, if any;
- c) Net and gross mass in kg;

- d) Month and year of packing; and
- e) Any other statutory requirements

**4.2.1** For supplies of material in tankers or bulk packaging, a test report containing the following additional information shall be provided for each tanker:

- a) Name of the material;
- b) Name of the manufacturer or trade-mark, if any;
- c) Net and gross mass in kg;
- d) Month and year of packing;
- e) Tanker number; and
- f) Any other statutory requirements

The test report shall be certified by authorized person of the manufacturer's organization.

**4.2.2 BIS Certification Marking**

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *BIS Act, 2016* and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.

**5 SCALE OF SAMPLING AND CRITERIA FOR CONFORMITY**

**5.1** The method of drawing representative samples of the material and criteria for conformity shall be as prescribed in Annex B.

**Table 1 Requirements for Carboxylated Styrene-Butadiene Rubber Latex**  
(Clause 3.1)

Sl No.	Characteristics	Requirements		Method of Test, Refer to
		Min	Max	
(1)	(2)	(3)	(4)	(5)
i)	Total Solid, percent	30	65	IS 9316 (Part 4)/ ISO 124 <sup>1)</sup>
ii)	pH at 25 °C	4	10	IS 9316 (Part 6)
iii)	Surface Tension, Dynes/cm, at 25 °C	30	55	IS 9316 (Part 1)/ ISO 1409 <sup>2)</sup>
iv)	Specific Gravity	1.00	1.04	IS 3104 (Part 2)
v)	Residual Styrene, percent by mass	—	0.1	IS 4511 (Part 3)/ ISO 13741-1 <sup>3)</sup>
vi)	Brookfield Viscosity, mPa.s, SP.1, 12 RPM/ SP2, 12 rpm at 25°C	20	1 000	IS 9316 (Part 2)/ ISO 1652 <sup>4)</sup>
vii)	Average particle size, nm	90	300	IS 101 (Part 10/Sec 1)/ ISO 22412 <sup>5)</sup>
viii)	Coagulum content, percent by mass	—	0.3	IS 9316 (Part 3)/ ISO 706 <sup>6)</sup>

<sup>1)</sup>In case of dispute, ISO 124 shall be the referee method for the determination of total solids.

<sup>2)</sup>In case of dispute, ISO 1409 shall be the referee method for the determination of surface tension.

<sup>3)</sup>In case of dispute, ISO 13741-1 shall be the referee method for the determination of residual styrene.

<sup>4)</sup>In case of dispute, ISO 1652 shall be the referee method for the determination of brookfield viscosity.

<sup>5)</sup>In case of dispute, ISO 22412 shall be the referee method for the determination of average particle size.

<sup>6)</sup>In case of dispute, ISO 706 shall be the referee method for the determination of coagulum content.

## ANNEX A

(Clause 2)

## LIST OF REFERRED STANDARDS

<i>IS No./Other publication(s)</i>	<i>Title</i>	<i>IS No./Other publication(s)</i>	<i>Title</i>
IS 101 (Part 10/Sec 1) : 2022/ISO 13320 : 2020	Methods of sampling and test for paints varnishes and related products: Part 10 Instrumental analysis, Section 1 Particle size analysis — Laser diffraction methods	IS 9316 (Part 6) : 2017/ISO 976 : 2013	Methods of test for rubber latex Part 6 Determination of pH ( <i>second revision</i> )
		ISO 124 : 2014	Latex, rubber — Determination of total solids content
IS 3104 (Part 2) : 1982	Specification for density hydrometers: Part 2 Methods of test and use ( <i>first revision</i> )	ISO 706 : 2004	Rubber latex — Determination of coagulum content (sieve residue)
IS 4511 (Part 3) : 1987	Methods of test for styrene-butadiene rubber (SBR) latices: Part 3 Determination of volatile unsaturates ( <i>first revision</i> )	ISO 1409 : 2020	Plastics/rubber — Polymer dispersions and rubber latices (natural and synthetic) — Determination of surface tension
IS 9316 (Part 1) : 1987	Methods of test for rubber latex: Part 1 Determination of surface tension ( <i>first revision</i> )	ISO 1652 : 2011	Rubber latex — Determination of apparent viscosity by the Brookfield test method
(Part 2) : 1987	Methods of test for rubber latex: Part 2 Determination of viscosity ( <i>first revision</i> )	ISO 13741-1 : 1998	Plastics/rubber — Polymer dispersions and rubber latices (natural and synthetic) — Determination of residual monomers and other organic components by capillary-column gas chromatography — Part 1: Direct liquid injection method
(Part 3) : 1987	Methods of test for rubber latex: Part 3 Determination of coagulum content (sieve residue) ( <i>first revision</i> )		
(Part 4) : 1988	Methods of test for rubber latex: Part 4 Determination of total solids content ( <i>first revision</i> )	ISO 22412 : 2017	Particle size analysis — Dynamic light scattering (DLS)
IS 9316 (Part 5) : 2013/ISO 123 : 2001	Methods of test for rubber latex Part 5 Drawing of samples ( <i>second revision</i> )		

**ANNEX B**  
(Clause 5.1)

**SCALE OF SAMPLING AND CRITERIA FOR CONFORMITY**

**B-1 TANK SUPPLIES**

**B-1.1** When the material is supplied in tanks or other bulk containers, each tank or bulk container shall be sampled separately.

**B-1.2** A representative sample shall be drawn from each tank of bulk container, from top and bottom, according to IS 9316 (Part 5).

**B-1.3** The sample shall be tested for all the requirements given in Table 1. The material in tank or bulk container shall be considered as conforming to this specification, if the corresponding representative sample satisfies all the requirements given in the specification.

**B-2 DRUM SUPPLIES**

**B-2.1 Lot** — All the drums, in a single consignment, of the same size and belonging to same batch of manufacture shall constitute a lot.

**B-2.2** The number of drums ( $n$ ) to be selected for sampling shall depend on size of the lot ( $N$ ) and shall be as agreed between the purchaser and the supplier.

**B-2.3** From each of the drums selected according to **B-2.2**, a representative sample shall be drawn in accordance with the procedure prescribed in IS 9316 (Part 5).

**B-2.4** For ascertaining the conformity of material to

the requirements of this specification samples shall be tested from each lot separately.

**B-2.5** The lot shall be declared as conforming to the specification, if the corresponding representative sample satisfy all the requirements given in the specification.

**B-3 FLEXI SUPPLIES**

**B-3.1** When the material is supplies in flexi container, each flexi container shall be sampled separately.

**B-3.2** A representative sample shall be drawn from each flexi container during loading of the material from filter attached to loading hose.

**B-3.3** The sample shall be tested for all the requirements given in Table 1. The material in flexi container shall be considered as conforming to this specification, if the corresponding representative sample satisfy all the requirements given in the specification.

**B-4 TEST SAMPLE AND REFEREE SAMPLE**

**B-4.1** After testing and conforming the material to the specification, the referee sample shall be kept. These samples shall be used in case of any dispute between the purchaser and the supplier.

**ANNEX C**  
(Foreword)

**COMMITTEE COMPOSITION**

Rubber and Rubber Products Sectional Committee, PCD 13

<i>Organization</i>	<i>Representative(s)</i>
Rubber Research Institute of India, Rubber Board, Kottayam	DR SIBY VARGHESE ( <b>Chairperson</b> )
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